#3585
OK

TECHNICAL MEMORANDUM
Utah Coal Regulatory Program

August 16, 2010

TO: File

THRU: Daron Haddock, Permit Supervisor

FROM: James D. Smith, Environmental Scientist III JS, 23 Aug 2010

RE: Amendment to Update MRP, PacifiCorp, Deer Creek Mine, Permit C/015/0018, Task ID #3585

SUMMARY:

On June 30, 2010, the Division received an amendment to update text, maps, and data for Volume 11, including Appendices 11A and 11B, of PacifiCorp's Deer Creek Mine MRP. The amended Appendix Volume 11A includes updated soil maps, results of the 2009 macroinvertebrate survey, and a comprehensive assessment of the 2004-2009 Rilda Creek macroinvertebrate and fish studies. The amended Appendix Volume 11B includes updated, as-built hydrological design information for the Rilda Canyon facilities - including text, tables, figures, and appendices – that is intended to replace the entire Hydrology Section of Appendix 11B.

Only two copies of the Amended maps have a PE signature signifying the design has been reviewed by a professional engineer. The Permittee states that once the Division gives conditional approval, the final Clean Copy submittal will have signatures affixed to all maps.

(This amendment is the first of three and provides as-built conditions in Rilda Canyon: the two subsequent amendments will be to update bonding calculations for the Rilda facilities and to reduce the permit area for the entire Deer Creek Mine to only those areas that are bonded.)

The Rilda Canyon Portal Facility is a satellite component of the Deer Creek Mine located in Rilda Canyon in an area previously disturbed by coal mining activities. The facilities are situated in the canyon bottom near the Rilda Canyon Springs. The Permittee incorporated recommendations from the USFS and North Emery Water Users Special Services District (NEWUSSD) in designing the drainage and sediment control for the Rilda Canyon Portal Facilities.

The initial plan for the Rilda Canyon facilities included two portal breakouts, fan, substation, bathhouse/office/warehouse, covered material storage, water treatment plant, water storage tank, sewer treatment system, runoff collection tank, parking area, paved access road, mine yard, and sediment pond. Adverse geologic conditions shortened the estimated life-of-mine and actual construction was less extensive. As-built facilities include one ventilation portal and one travel access portal, fan, substation, covered material storage, covered oil storage area, rock dust silo, paved access road and mine yard, sediment basin, and sedimentation pond. Construction of the facilities began in 2006 and was completed in 2009, with a December 1st to April 15th exclusionary period observed every year.

The Division should not approve this amendment until the Permittee satisfactorily addresses the following deficiency:

R645-301-742.320, -330, Because some values for ditch and culvert lengths in Tables 6, 7, 8, and 9 in Volume 11B don't match culvert and ditch lengths shown on Map 700-2, the Permittee must assure that correct lengths have been used to calculate the slope values which were input into the ditch and culvert design calculations in Appendices 2 and 3 of Volume 11B, in particular for UD-5, DD-3, DD-4, and UC-2. As needed, revise Tables 6, 7, 8, and 9 in Volume 11B to incorporate accurate ditch and culvert lengths.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

Updated Volume 11 includes changes in Chapters 200 Soils through 700 Hydrology. Amended maps are included in this volume; however, only two copies of the Amended maps have a PE signature signifying the design has been reviewed by a professional engineer. The Permittee states that once the Division gives conditional approval, the final Clean Copy submittal will have signatures affixed to all maps.

Appendix Volume 11A includes updated soil maps, results of the 2009 macroinvertebrate survey, and a comprehensive assessment of the 2004-2009 Rilda Creek macroinvertebrate and

fish studies. The amended Appendix Volume 11B includes updated, as-built hydrological design information for the Rilda Canyon facilities - including text, tables, figures, maps, and appendices – that is intended to replace the entire Hydrology Section of Appendix Volume 11B.

Findings:

Permit Application Format and Contents are sufficient to meet the requirements of the Coal Mining Rules.

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

The Rilda Creek macroinvertebrate surveys added to Appendix Volume 11A were performed by the Division of Wildlife Resources and Ernesto de la Hoz, a private contractor.

Hydrologic data in Appendix B were collected by the Permittee. Construction drawings, including hydrologic designs, developed by Jones and DeMille Engineers are in Appendix Volume 11A. Blackhawk Engineering provided information on design storm events.

Findings:

Reporting of Technical Data is sufficient to meet the requirements of the Coal Mining Rules.

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

The Permittee has provided sediment and runoff control for the Rilda Canyon Portal Facility by paving portions mine yard, sloping the mine yard and county road to the north (away from Rilda Creek), using ditches and culverts to divert undisturbed runoff around or beneath the disturbed area, collecting runoff from the disturbed area into drop inlets, culverts, and ditches and into a collection basin below the facilities. Overflow from the collection basin is piped to a sedimentation pond located downgradient of the NEWUSSD Rilda Spring collection system. Map 700-2 shows the location for these features, and Appendix Volume 11, R645-301-500 Engineering, Maps Section contains design drawings by Jones and DeMille Engineering.

The following storm frequency and intensity values were used in the hydrologic designs:

Frequency	- Duration	Precipitation
10 year	- 6 hour	1.55"
10 year	- 24 hour	2.45"
25 year	- 6 hour	1.88"
100 year	- 6 hour	2.07"

Groundwater and Surface Water Monitoring

There has been no change to the Groundwater or Surface Monitoring plans. The plans are adequate to meet the requirements of the Coal Mining Rules.

Discharges Into an Underground Mine

The original Rilda Canyon Portal Facility plan included disposal of disturbed area runoff and grey water by pumping it into the mine. The water would then flow through the mine workings and become part of the mine water discharged under the UPDES permit at the Deer Creek Canyon portals. This collection and pumping system was not built and the discussion of it has been removed from Volume 11. All disturbed area runoff is now either treated by ASCAs or the sedimentation pond.

Gravity Discharges from Underground Mines

There is no discharge from the portals in Rilda Canyon. Mine water is routed through underground workings or sump areas and all water discharged from the mine exits at the Deer Creek Mine portals in Deer Creek Canyon. Monitoring of that discharge is in accordance with UPDES permit standards and state and federal regulations. (Volume 11, PHC, subsection D

Water-Quality Standards and Effluent Limitations

Because the sedimentation pond is located within a USFS boundary, it cannot discharge to surface waters and therefore is not on the Deer Creek Mine UPDES permit; however, if the

UPDES permit; however, if the pond were ever to discharge via the riprap lined, open-channel emergency spillway, it would be to Rilda Creek. The sedimentation pond was originally designed to totally contain runoff from approximately 9 acres for a 10-year, 24-hour event and was built to that size, but because only approximately 3.5 acres actually contribute runoff to the pond, it is unlikely that the pond will ever discharge.

The Permittee did not build the bathhouse that was originally planned for the Rilda site, so no grey or black water is generated and the planned sewage treatment system was not built.

Diversions: General

Not all ditch lengths listed in Tables 6 and 7 match the ditches as they are shown on Map 700-2. Ditch length is not directly involved in ditch design, but length is used to determine slope, which is a critical factor in the design (all undisturbed area ditches are armored). Most ditches listed in Table 6 appear to closely match the length shown on Map 700-2; however, UD-5 is listed as 390 feet long but measures approximately 275 feet on Map 700-2 (1"=100'). While the lengths of DD-1 and DD-2 listed in Table 7 match closely the lengths shown on Map 700-2, DD-3 is listed as 785 feet long in Table 7 but appears to be approximately only 275 feet long on the map, and Table 7 shows DD-4 as 630 feet, but the ditch measures approximately 400 feet on the map.

Likewise, culvert lengths listed in Tables 8 and 9 don't match the culverts as they are shown on Map 700-2. In Table 8, UC-2 as listed at 308 feet long, but on Map 700-2 UC-2 measures approximately 150 feet. UC-4 and UC-5 appear to be much longer on Map 700-2 than shown in Table 8, but in these two cases the culverts report to the stream and the culvert lengths on the map may not have been drawn with the intention of showing a particular, critical length. As with ditches, culvert length is not directly involved in culvert design, but length is used to determine slope, which is a critical factor in the design.

The Permittee must revise Tables 6, 7, 8, and 9 to include accurate ditch and culvert lengths and assure that correct lengths were used to calculate the slopes which were input for the ditch and culvert design calculations in Appendices 2 and 3.

Plans prepared by Jones & DeMille Engineering are in Chapter 5, Engineering Maps. These include inlet and outlet structures and cleanouts for culverts, drop inlets and drains, sediment basin inlet, sedimentation pond inlet with energy dissipation, sedimentation pond primary and secondary spillway, and typical ditch cross-sections.

All undisturbed area culverts are sized to handle expected runoff from a 10-year, 24-hour event, well in excess of the 10-year, 6-hour event requirement of the Coal Mining Rules. Culvert sizes were verified using Haestad Methods, Flowmaster, Version 5.13.

Diversions: Perennial and Intermittent Streams

There were no diversions of perennial or intermittent streams for the Rilda Canyon Portal Facility.

Diversions: Miscellaneous Flows

Miscellaneous flows from undisturbed areas above the Rilda Canyon Portal Facility are intercepted by ditches and diverted under the facility through culverts to Rilda Creek. Design parameters for the ditches and culverts are in Sections 2.1 through 2.10 in Appendix Volume 11B. Culvert design information is in Appendix 2 and ditch design information in Appendix 3 of Volume 11.

Stream Buffer Zones

Ephemeral channels drain the undisturbed south-facing slope adjacent to the Rilda Canyon Portal Facilities. The undisturbed drainage is intercepted by ditches and diverted under the disturbed area through culverts that discharge to Rilda Creek. Portions of the Rilda Canyon Portal Facility are within one hundred feet of Rilda Creek, a perennial stream. Signs indicate the area beyond which no additional disturbance is to take place. Water quality of Rilda Creek is protected from potential impacts through a combination of sediment control structures and revegetation; interim revegetation is discussed in 645-301-300 Biology Section and the Drainage and Sediment Control Plan is in Appendix B, Volume 11.

UDWR conducted pre- and post-disturbance evaluations of macroinvertebrate populations and resident fish populations in Rilda Creek. The amended Appendix Volume 11A includes results of the 2009 UDWR macroinvertebrate survey and a comprehensive assessment of the 2004-2009 Rilda Creek macroinvertebrate and fish studies.

Sediment Control Measures

The five ASCA locations are shown on Map 700-2, and the ASCAs are described in Section 2.11 of Appendix Volume 11B. The alternate sediment control methods used are described in Appendix 4 of Appendix Volume 11B.

Siltation Structures: General

Sediment control structures include a catchment or sedimentation basin, sedimentation pond, and ASCAs that utilize re-vegetation, silt fence, rock check dams, riprap, and fiber rolls; details are in Appendix 4 of Appendix Volume 11B

Siltation Structures: Sedimentation Ponds

Design and construction specifications for the sedimentation pond are in Section 3.1 of Appendix Volume 11B, pond cross sections are on Map 500-4 part 4 of 4, and Map 700-3 shows the plan and cross sections for the pond. The pond is designed for full containment of a 10-year, 24-hour storm. The pond was originally planned to contain runoff from approximately 9 acres and was built to that size, but because the Rilda Canyon Portal Facility was scaled back from the original design, only approximately 3.5 acres contribute runoff to the pond. The emergency open-channel spillway, lined with rip-rap, would discharge to Rilda Creek; however, the Deer Creek Mine UPDES permit does not cover discharges from this pond because Rilda Creek is within the USFS boundary and is therefore classified as Category 1 water into which new point source discharges of wastewater - treated or otherwise - are prohibited.

The Permittee used RUSLE2 to estimate soil loss from unpaved disturbed areas: details are in Appendix 5 of Appendix Volume 11B. All soil loss was assumed to be deposited in the sedimentation pond. RUSLE shows no soil loss from the paved areas.

With two exceptions, no soil loss from undisturbed areas is expected to reach the sedimentation pond; undisturbed areas above the sedimentation basin and sedimentation pond deliver overland flow and sediment to the pond.

Siltation Structures: Other Treatment Facilities

No Other Treatment Facilities are planned for the Rilda Canyon Portal Facility.

Siltation Structures: Exemptions

There are no exempt siltation structures at the Rilda Canyon Portal Facility.

Discharge Structures

Volume 11, Engineering, Maps Section contains plans for discharge structures by Jones and DeMille Engineering. These include the discharge structures for the culverts, sedimentation pond, and catchment or sedimentation basin.

Impoundments

In addition to the sedimentation pond, the Permittee has built a catchment basin, which is in effect a sedimentation pond except that any discharge reports to the sedimentation pond, which is located farther down the canyon.

Findings:

Operation Hydrologic Information is not adequate to meet the requirements of the Utah Coal Mining Rules. Before the Division can approve this amendment, the Permittee must provide the following information, in accordance with:

R645-301-742.320, -330, Because some values for ditch and culvert lengths in Tables 6, 7, 8, and 9 in Appendix Volume 11B don't match culvert and ditch lengths shown on Map 700-2, the Permittee must assure that correct lengths have been used to calculate the slope values which were input into the ditch and culvert design calculations in Appendices 2 and 3 of Appendix Volume 11B, in particular for UD-5, DD-3, DD-4, and UC-2. As needed, revise Tables 6, 7, 8, and 9 in Appendix Volume 11B to incorporate accurate ditch and culvert lengths.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

Drainage control for the reclaimed area and channel restoration are discussed in Sections 4.1 through 4.4 of Appendix Volume 11B. Channel and riprap sizing information are in Tables 13 and 14. The Permittee used FlowMaster to design the reclamation channels, and the results are in Appendix 6 of Appendix Volume 11B.

The Permittee commits to remove undisturbed culverts and replace them with reclaimed channels that will be sized to carry the runoff from a 100-year, 6-hour storm. The Permittee commits to reconstruct channel RC-3; design criteria are in Table 13 and 14 and Figure 5. Roadway culverts will be re-installed to control and divert runoff from upland areas. All other hydrologic controls, including the sediment pond, will be removed.

Sediment control for the reclamation will be accomplished by extensive roughening or gouging and revegetation of the reclaimed area. Map 700-4 "Minesite Reclamation" shows locations and reclamation details.

The Permittee used RUSLE2 to estimate sediment yield from reclaimed areas. Results are in Appendix 7 - Soil Loss Calculations (RUSLE) – Reclamation of Appendix Volume 11B. The Permittee evaluated one flow path that delivered all soil to the roadside ditch as representative of the entire reclaimed site. Sediment delivery to the ditch is expected to contribute 5.9 tons/ac/yr, or 31.9 tons/yr (0.42 acre feet per year) from 5.4 acres, which the Permittee feels relates well to background sediment delivery values. Because of RUSLE's limited capacity to model soil loss from areas roughened by "pocking", the Permittee is of the opinion that actual soil loss quantities will be much less than what the modeling predicts.

Findings:

Hydrologic Reclamation in the MRP is sufficient to meet the requirements of the Coal Mining Rules.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The current CIA includes Rilda Canyon and proposed amendment does not propose any substantive changes to the hydrologic operations or reclamation plans that might require modification of the CHIA.

Findings:

This amendment does not require an update or revision of the CHIA.

RECOMMENDATIONS:

The Division should not approve this amendment until the Permittee satisfactorily addresses the deficiency identified above